

Docket #: S05-164

Cell-based assay for Wnt signaling

Cells that stably express a luciferase reporter construct, driven by the TCF transcription factor have been made. These cells respond to added Wnt protein in a highly reproducible and quantifiable way and are very suitable to test for the activity of candidate inhibitors of Wnt signaling, such as small molecules.

The cells are transfected in a stable permanent way with a variant of the Top-Flash reporter. These cells respond to added purified Wnt3A protein by an increase in luciferase activity. The dynamic range (response to Wnt from 1-200 nanogram/ml Wnt) and increase in luciferase activity (500 fold) is higher than in previously established Wnt reporter systems. The cells are easy to grow and the luciferase response can be automated, making this system suitable for high-through put screens for Wnt inhibitors.

Available material: Cells that stably express a luciferase reporter construct, driven by the TCF transcription factor, including the following cell lines:

1. Mouse L cells stably expressing a Wnt reporter, responding to Wnt3a protein over a 500 fold dynamic range;
2. Human 293 cells, stably expressing a Wnt reporter, responding to Wnt3a protein over a 100 fold dynamic range;
3. Drosophila S2 cells, stably expressing a Wnt reporter and the Frizzled1 receptor, responding to Wingless protein over a 300 fold dynamic range.

Applications

- To test the activity of wnt signaling in cell culture.

Advantages

- Quantification and Sensitivity.

Publications

- Carlson ME, Conboy MJ, Hsu M, Barchas L, Jeong J, Agrawal A, Mikels AJ, Agrawal S, Schaffer DV, Conboy IM. [Relative roles of TGF- \$\beta\$ 1 and Wnt in the systemic regulation and aging of satellite cell responses.](#) Aging Cell. 2009 Sep 2.
- Fuerer C, Habib SJ, Nusse R. [A study on the interactions between heparan sulfate proteoglycans and Wnt proteins.](#) Dev Dyn. 2009 Aug 24.
- Brack AS, Conboy MJ, Roy S, Lee M, Kuo CJ, Keller C, Rando TA. [Increased Wnt Signaling During Aging Alters Muscle Stem Cell Fate and Increases Fibrosis.](#) Science. 2007 Aug 10;317(5839):807-10.
- Blitzer JT, Nusse R. [A critical role for endocytosis in Wnt signaling.](#) BMC Cell Biol. 2006 Jul 6;7:28.

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